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ABSTRACT

This assessment of the status of research on instructional development (ID) discusses such conceptual problems as the confusion between ID and instructional design, reviews previous research, and proposes a framework for future ID research. Decision-oriented issues discussed within this framework include: (1) administrative and policy issues of ID agencies; (2) internal organization and management of ID teams; (3) interaction with clients; (4) social and political relationships with supra-systems; and (5) optimization of ID procedures such as model development, needs analysis, learner analysis, task analysis, environmental analysis, objectives specification, prototype construction, formative evaluation, summative evaluation, and implementation. Conclusion-oriented issues, a second broad category within the framework, are discussed in the context of the definition and effectiveness of ID. The behavior of participants in the ID process and the effects of ID products on their intended audiences are also identified as major classes of phenomena to be studied, and direct, indirect, and simulated observation are suggested as possible research methodologies. Sixty references are listed. (MES)

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An Agenda for Research on Instructional Development

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Running Head: Agenda for Research

Several years ago Durzo, Diamond, and Doughty (1979) provided a lucid analysis of research needs in instructional development. This paper aims to reassess and update the status of research on the broad process of instructional development and to suggest an agenda for future inquiry. It will analyze several conceptual problems that have constrained previous research, suggest resolutions of these problems, and provide a detailed framework for future research, including specific questions and suggestions for methods of inquiry.

Definitional Problem

Much to the detriment of communication among scholars, the terms "instructional design" and "instructional development" have been used interchangeably by many researchers and theoreticians over the past fifteen years. This problem has persisted even though the earliest papers in this field originally used "instructional development" as the broader term (e.g., Faris, 1968) and despite the fact that the most widely accepted definitional schema in the field of educational technology also defines instructional design as a subset of instructional development (AECT, 1977). Further, some authors fail to distinguish instructional development from the related processes of faculty development, student development, organizational development, and the like.

Two recent works have contributed greatly to a renewed clarification of this cluster of related concepts. First, Reigeluth's (1983) highly regarded (and aptly titled) book, Instructional-Design Theories and Models does indeed focus on instructional design issues. In it Reigeluth takes pains to distinguish instructional design from instructional development. When used technically, these terms are defined as follows:

> Instructional design . . . is the process of deciding what methods of instruction are best for bringing about desired changes in student knowledge and skills for a specific course content and a specific student population (p. 7).
>
> Instructional development is the process of prescribing and using optimal procedures for creating new instruction in a given situation (p. 8).

When speaking generally of the whole process of which these two are components, Reigeluth uses "instructional development" as the superordinate term.

Second, Bass and Dills (1984) entitle their wide-ranging anthology as Instructional Development: The State of the Art. The collection includes Robert Braden's seminal paper, "A Place in Space: ID's Universe," which has been hailed by reviewers for its definitional clarity. In it, the broad concept of instructional development is distinguished from the related concepts of faculty development (modifying attitudes and skills of faculty), organizational development (organization-wide effort to implement controlled change), student development (providing student with additional learning tools), and context development (planned efforts to change the environment surrounding an instructional system).

The importance of defining terms clearly is illustrated by Hannafin's recent overview (1986) of current and future directions of research. He

variously refers to his focus of attention as "instructional design and technology," "instructional development and technology," "instructional development," "design of instruction," and "the ID field" (exact referent of the acronym is unspecified). His generalizations are often difficult to evaluate because the referent is unclear. For example: "Perhaps due to the strong influence of the behavioral sciences on the ID field . . . experimental paradigms have dominated published research" (p. 25). This may be true of instructional design, but not of instructional development. In fact, Hannafin raises a number of legitimate issues and gives a useful set of recommendations for encouraging more and better research in any field. But the prescriptions are generic; this is expectable given the "shotgun" diffuseness of the diagnosis. This paper aims to suggest a more specific set of recommendations regarding a framework and agenda for future instructional development research.

For the sake of clearer communication, I propose that the term "instructional development" be used to refer to the systematic process of analyzing, designing, producing, evaluating, and implementing instructional systems or components thereof. By this definition, "instructional design" is a subset of instructional development, referring to that part of the process devoted to specifying instructional treatments most appropriate for attaining particular objectives by a given set of learners. It is the part of the process that fits between learner/task analysis and selection/production of methods/materials. Its outcome is the set of specifications for the methods and materials.

Review of Previous Research

Two recent critiques of research in educational/instructional technology by Winn (1986) and Gerlach (1984) provide a convenient point of departure for a review of previous research on instructional development (ID). First, both Winn and Gerlach deal with the whole domain of educational/instructional technology and they both implicitly treat the issues of "learning from media" as the Heartland of the field; however, they do allude to instructional design/development as a major subset of the larger field. Unfortunately for our present purposes, they both use the terms design and development interchangeably. Inferring from the variables they discuss and the examples they use, it appears that both authors usually are focusing on what is here called instructional design. For example, in referring to recent findings on "instructional development," Winn says, "We are beginning to discover the relationships among task, student characteristics, methods and strategies that students actually use" (pp. 8-9). Such a statement indicates a fixation with design issues, as contrasted with the broad concerns--social, political, and economic--that are salient to a complex process conducted by people in various human settings.

Because of such biases in recent research syntheses it is difficult to get a sense of where we stand in instructional development research above and beyond the design issues. Consequently, I recently undertook an independent review of research with the assistance of several graduate students. Our search centered around the scholarly journals in the field of educational/instructional technology plus relevant dissertations catalogued in Dissertation Abstracts International. One of the more promising bodies of literature

that has not been adequately explored is that of government/military research on ID. Two very recent articles, by McCombs (1986) and Ellson (1986), indicate that there is a substantial reservoir of government-sponsored research on ID conducted in military and foreign educational settings that has not yet been integrated adequately into the academic mainstream. McCombs's and Ellson's observations are referred to later in this paper, but the primary sources have not yet been reviewed.

In general, if one excludes studies dealing primarily with instructional design concerns (relationships among various treatments, learners, and tasks), the major scholarly journals closest to the instructional development (ID) field carry relatively few reports of research on ID. That is, few articles were found that reported quantitative or qualitative findings on the ID process itself; the sub-processes of analysis, selection/production, evaluation, or implementation; professional roles of instructional developers; or socioeconomic aspects of ID. Six such studies were found in Journal of Instructional Development since 1978 (Nalbone, 1979; Guzy et al., 1979; Klein & Doughty, 1980; Vanek & Kennedy, 1981; Willis, 1983; Higgins & Reiser, 1985); of these, four are basically case studies.

In Educational Communication and Technology Journal (and its predecessor AV Communication Review) since 1974, six studies reported data on ID phenomena (Hoban, 1974; Savage, 1975; Kandaswamy et al., 1976; Kerr, 1977; Burton & Aversa, 1979; Shrock, 1985); another (McCombs, 1986) synthesized evidence from earlier field research.

NSPI's Improving Human Performance Quarterly in the 1970s and--to a lesser extent--Performance & Instruction in the 1980s have also carried a number of reports based on empirical research on ID (Short, 1973; Smith et al., 1976; Nathenson et al., 1977; Smith, 1978a; Smith 1978b; Krug et al., 1979; Golas, 1983; Wager, 1983).

Other journals, including Educational Technology, Phi Delta Kappan, and Educational Psychologist, carry ID research articles on occasion. But, even looking only at the mainstream journals, ID research occupies a rather small niche, representing no more than 5 percent of the total articles carried in these journals.

In sheer quantity, unpublished dissertations comprise the single largest source of research on ID, contributing perhaps half of the total "knowledge base" in this field. Eighteen dissertations are cited in the References, representing those studies that fell closest to the domain of ID as defined here (again, excluding instructional design studies) and which most clearly are based on observational data gathered under laboratory or field conditions. Excluded are a dozen or more questionnaire surveys which seemed to serve no theoretical purpose beyond describing some audience's "awareness" or "attitude toward" ID. Examples of the dissertations included in this review are: Patterson (1981) who interviewed developers and examined documents in ten corporate settings to determine the extent to which they employed ID procedures; Scudder (1982) who used a questionnaire to survey corporate instructional developers to determine the extent of their use of ID procedures; Orban (1982) who did an ethnographic study, observing the consultation interactions between a developer and several clients; and Holsclaw (1974) who surveyed thirteen ID agencies in higher education concerning their working guidelines, distilling these into over 100 "heuristics" for conducting ID.

It's difficult to generalize about the set of studies gathered in this search. They represent every point on the quantitative/qualitative spectrum, from Kandaswamy, Wager, and Nathenson on the experimental design end of the scale to Shrock and Chen on the naturalistic end. What may be most notable is that there is no prevailing paradigm evident. Contrary to what other reviewers consistently claim is the pattern in media and instructional design research, the experimental psychological paradigm is followed in a minority of these studies. It appears that there is still a ready market for exemplars to set the pattern(s) for future research in this area. The field does not appear to have yet decided what is a "good" model for instructional development research.

New Approaches Advocated

At least since Salomon and Clark's (1977) critique of the methodology of research on instructional media and technology there has been an awareness of the limitations inherent in experimental laboratory research in the whole domain of Educational Technology. Salomon and Clark focused on the dilemma of internal vs. external validity. As they put it, "the more it [media research] moved into the deeper layers of understanding media, the farther it went from the world of education" (p. 106). Their principal recommendation was to buttress external validity by moving toward research in natural settings, and they suggested several pseudo-experimental designs to maintain some degree of internal validity.

Salomon and Clark's admonition has been echoed with variations by many voices since then. Driscoll (1984) compiled an extensive list of alternative research paradigms, each with example studies, suitable to different questions in the domain of "instructional systems." She mentioned quasi-experimentation, meta-analysis, case study and ethnography, systems-based evaluation, cost-effectiveness analysis, and techniques and model development. Although some of her examples could be construed as instructional development (ID) research, most fall into the larger domain of Educational Technology or the instructional design subset.

Heinich's (1984) classic essay on the proper concerns of instructional technology speaks to ID as well in calling for systems analyses and other such "engineering" type decision-oriented studies. His main appeal is that the very nature of the instructional technology field, being based in professional practice, demands a shift away from conclusion-oriented research, which so far has contributed more to the knowledge base of educational psychology than to instructional technology. Incidentally, Cunningham (1986) in his recent critique of "method A versus method B" comparison studies, questions the assumptions such studies are based on and denies that they have contributed to the knowledge base even of educational psychology.

Stephen Kerr (1985), in his introduction to a theme issue of ECTJ points out a "blind spot" in the study of educational communications and technology: "questions relating to the ways in which educational technology affects the social relationships among those who work and learn in educational institutions and how it may change the nature of those institutions themselves" (p. 3).

The importance of social issues has been pointed out most persuasively and most directly for instructional development by Schwen and his colleagues (1984). They emphasize that the practice of ID demands an understanding of social processes since ID is itself a social process (i.e., team planning) and a social intervention (i.e., working with instructor clients) which invariably takes place within a complex social system.

A Conceptual Framework for ID Research

In their perceptive analysis of ID research needs, Durzo, Diamond, and Doughty (1979) defined their domain to include not only instructional design as a subset of instructional development, but also faculty development (FD) and organizational development (OD). This attempt to update their work will specifically exclude FD and OD simply because they are clearly separate constructs (as Braden argues) with different critical attributes. I will also differ from Durzo, Diamond, and Doughty by restricting the concept of "instructional design" more narrowly than they, limiting it (as Reigeluth argues) to the specification of instructional treatments. Finally, I will follow the lead of Heinich, Kerr, and Schwen et al. by expanding ID's social concerns beyond the project management and client relationship categories suggested by Durzo, Diamond, and Doughty.

Taking into consideration the framework proposed by Durzo, Diamond, and Doughty, adding to it the topics covered in previous research, and the social issues raised by Kerr, Heinich, and Schwen et al., and filling in obvious gaps, I have developed the following general framework as a beginning point in the search for a comprehensive framework for future ID research. I will first present a broad outline, then flesh in the details, section by section. Note that the outline is divided into two parts: Decision-oriented issues and Conclusion-oriented issues. Not only do these two directions appeal to different consumers, but they also imply qualitatively different questions.

DECISION-ORIENTED ISSUES

I. Administrative and policy issues of ID agencies

II. Internal organization/management of ID teams

III. Interaction with clients

IV. Social/political relationships with supra-systems

V. Optimization of ID procedures

- A. Overall ID model
- B. Needs analysis
- C. Learner analysis
- D. Task analysis

E. Environmental analysis

F. Objectives specification

G. Instructional design (NOT ELABORATED IN THIS PAPER)

H. Prototype construction

I. Formative evaluation/revision

J. Summative evaluation/revision

K. Implementation of developed instruction

CONCLUSION-ORIENTED ISSUES

I. Definition of instructional development (ID)

II. The value of ID

Let us proceed to flesh out the details of these issues, their sub-issues, and the research questions that they imply.

I. Administrative and policy issues of ID agencies. Durzo, Diamond, and Doughty suggest a number of issues to be pursued in this category.

A. The costs and benefits of ID

1. What organizations should consider doing ID?

2. What are the costs of doing ID?

3. What are the benefits of ID?

4. How can cost/benefit tradeoffs be calculated?

5. How much time does ID require?

6. What variables in the ID process affect time expenditures? Money costs?

B. Administrative setup

1. Where should an ID agency be placed in the organizational hierarchy?

2. Who should direct an ID agency? What rank in the organization? Reporting to whom?

3. What should be the organizational relationship between ID agency and production agency? evaluation agency? training agency? other related agencies?

C. Role of ID agency

1. What services are valued by instructor-clients?

2. What services are valued by administrator-clients

3. What mix of services is most likely to make the largest instructional improvement impact?

4. What mix of services is most likely to lead to longevity of the agency?

D. characteristics of ID agency

1. What competencies should be represented on the staff?

2. What variables affect the optimal staff size (e.g., size of supra-system in terms of budget, employees; number of projects undertaken)?

3. On what basis should ID services be centralized or decentralized?

E. Approaches taken to ID

1. What are the tradeoffs involved in emphasizing product development vs. training clients to solve their own problems? What are the costs of each approach? Benefits of each?

2. What attitudes or skills should be included in client training?

F. Project Generation/Selection

1. Is it more productive to pursue a few large projects or many small ones? Which approach contributes more to overall instructional improvement? Which leads to greater longevity of the ID agency?

2. Should projects be generated internally from an analysis of organizational needs or externally from "walk-in" requests by instructor-clients?

3. What diffusion strategy generates more project proposals?

4. What sorts of incentives attract clients? What factors in the organizational climate have an effect on who supports ID and how strongly?

5. By what criteria should project proposals be evaluated and prioritized?

6. Who should set criteria for prioritization? What are the advantages/disadvantages of advisory boards?

II. Internal organization/management of ID teams.

A. Personnel

1. What competencies are needed on different types of project teams?

2. How many people can work productively on one project? Does adding staff increase or reduce the time needed to complete a project?

3. Who should lead the ID team?

4. What group dynamics skills are necessary for team members?

B. Budgeting: time and money

1. What administrative factors affect the cost of ID? How?

2. What factors affect manpower needs? What factors determine time requirements?

C. Internal organization

1. Under what sorts of supervision and operating rules do different teams work best? Democratic? Authoritarian? Laissez-faire?

2. What are useful methods of team building? . . . decision making? . . . sharing power/control? . . . conflict management?

3. What sorts of documentation should be carried on routinely? . . . by teams? . . . by agency?

III. Interaction with clients.

A. Client attributes

1. Who volunteer to be ID clients?

2. What attributes of clients tend to be functional/dysfunctional?

3. On what basis should clients be selected?

B. Developer attributes

1. What developer attributes tend to be functional/dysfunctional?

2. How can rapport be established? To what extent and in what ways does rapport contribute to project success?

C. Strategies of interaction

1. Are there predictable phases in the developer-client psychological relationship? How can these be recognized? What strategies can be used to manage this relationship?

2. What are the advantages/disadvantages of various strategies of managing this relationship (e.g., regarding goal-setting, decision making)?

3. What are appropriate tactics for each strategy (i.e., components of "consulting style")?

IV. Social/political relationships with supra-systems.

A. Organizational settings

1. How can the various organizational settings be classified (e.g., public/private school, public/private college, corporation, government agency)?

2. What attributes of the setting have an effect on acceptance or productivity of ID activities (e.g, "traditional" vs. "innovative" cultures)?

3. What elements in the organizational setting generate political consequences for ID? Which elements in the supra-system? . . . in the supra-supra-system? . . . in higher echelons?

4. What elements within or beyond the organization generate economic consequences for ID? Which are short-term, which are long-term?

B. Goals and values

1. How do the goals/values of ID correspond with the goals/values of the different actors?

2. How receptive are different "corporate cultures" to the values of ID?

3. Do different actors (e.g., administrators vs. instructors) differ in their acceptance of the values of ID?

4. Do unionized and non-unionized organizations differ in their receptivity to ID?

C. Political strategies

1. What strategies can be used to enhance the social/political/economic position of ID agencies (e.g., role of advisory boards)?

2. What are the political consequences of different operating strategies (e.g., project selection policies)?

3. What are the social/political/economic incentives of the different actors?

D. ID effects on the organization

1. What effects does an ID agency have on the organization (e.g., as a model of rational decision-making)?

2. Does having an effect on the organization create political problems (e.g., professional jealousy)?

E. National cultures

1. To what extent do different national cultures affect the acceptance of ID?

2. Do attributes of different national cultures affect the productivity of ID agencies?

V. Optimization of ID procedures. As is the case with any field of practice, a good deal of the inquiry in ID has been conducted with the objective of improving professional practice. The concerns in this area revolve around identifying useful techniques for doing ID.

Many of the early dissertations in the ID field were aimed at discovering and testing overall models of ID (Stowe, 1971; Belmore, 1973; Holsclaw, 1974). Very recently, at least two knowledgeable researchers have felt that sufficient evidence exists to make a judgment as to the efficacy of the most prominent ID models. Douglas Ellson (1986) in his systematic review of research studies in which technological instructional methods have been compared with conventional methods identifies several broad techniques (e.g., programmed learning and programmed teaching) that consistently yield higher "relative productivity ratios" than conventional instruction. Among such successful techniques he includes "performance-based instructional design" in which "information obtained in one tryout of a particular teaching procedure with one group of pupils is used as the basis for revising the design of that procedure for the group. . ." (p. 119).

Ellson cites as the basis for his judgment reports of several large-scale applications of ID procedures in elementary schools in the U.S., in elementary schools in Southeast Asia, and in U.S. military training. Interestingly, the military ID model that he cites, "Interservice Procedures for Instructional Systems Development (ISD)" is the same one examined in depth by McCombs (1986). McCombs surveys a much broader range of literature on ISD and finds that there is a widespread perception, especially in the military, of the failure of the ISD model. She attributes this perception to the users' "failure to maintain a total systems perspective and of reducing the problem focus to the development of self-paced or individualized materials" (p. 71). She feels that systematic ID must be a complex, creative process applying higher order analytical skills. Reduced to mere routine procedures (as is the temptation in bureaucratized ID agencies) the model loses its effectiveness. McCombs charts a course for continuing research on the overall effectiveness of ID models by generating a set of "empirically identified factors in the successful implementation of ID."

Questions in this area can be clustered first under the general heading of ID models overall, and then under headings signifying each of the elements in the ID process.

A. ID models overall

1. How can different ID models be classified?

2. Do different models differ in their effects, given that each is applied conscientiously?

3. What factors are associated with greater impact on instructional improvement? . . . on continued support of ID activities?

4. What are the relative strengths and limitations of each type of ID model?

5. On what basis should a developer select a model to follow?

B. Needs analysis: What are optimal procedures for needs analysis?

C. Learner analysis: What are optimal procedures for learner analysis?

D. Task analysis: What are optimal procedures for task analysis?

E. Environmental analysis: What are optimal procedures for environmental analysis?

F. Objectives specifications: What are optimal procedures for objectives specification?

G. Instructional design: What are optimal procedures for instructional design? That is, what design rules yield better decisions about matching treatment with audience with learning task?

H. Prototype construction: What are optimal procedures for prototype construction?

I. Formative evaluation/revision: What are optimal procedures for formative evaluation/revision?

J. Summative evaluation: What are optimal procedures for summative evaluation?

K. Implementation: What are optimal procedures for implementing developed instruction?

CONCLUSION-ORIENTED ISSUES

Researchers, especially those approaching ID from the perspective of educational psychology, tend to begin by raising conclusion-oriented questions. Their agenda is dominated by a concern for reaching conclusions about the value of ID relative to other instructional planning methods. This perspective is typified by studies comparing "method A" with "method B." Such studies often make implicit assumptions about the hypothetical constructs of "instructional development" and "conventional instruction." They assume that these constructs actually exist and they have certain attributes. The

problems with these assumptions have been expressed cogently by Gerlach and by Clark in a number of articles over the past decade; Gerlach (1984) and Clark (1985) are recent presentations of these issues.

It is at least equally logical to defer conclusion-oriented questions until researchers have worked out a "feel" for the phenomena under discussion by means of extensive observation under field conditions. Ideally, as in other domains of theory/practice, a dialectic evolves in which theoretical frameworks suggest directions for specific investigation, and the results of those investigations are fed back into clarifying the relevant constructs and adjusting the theoretical framework.

Questions in this area tend to revolve around the philosophical concerns of what is true, what is good, and what is beautiful.

I. Definition of instructional development.

A. Meanings

1. What meanings are attributed by users of the term (inferred from their usages)?

2. What meanings can be inferred from observation of ID programs?

3. What meanings are proposed authoritatively?

B. Critical attributes

1. As a hypothetical construct, what are the critical attributes of ID?

2. To what extent does this hypothetical construct exist in reality? (Is anyone really doing ID?)

II. The value of instructional development.

A. Effectiveness

1. Is ID more or less effective than alternative methods of planning instruction?

2. Does the use of ID lead to superior learning?

B. Cost/benefit

1. What are the expected cost/benefit tradeoffs of ID?

2. What are the most meaningful elements to count as "costs"? . . . as "benefits"?

C. Side effects

1. What are the short-term side effects of ID?

2. What are the long-term side effects of ID? . . . on learners? . . . on organizations? . . . on societies?

Phenomena to Study and Methods of Observation

Given the above agenda of questions to be answered, how would one go about attempting to cast light on these processes? What phenomena would the researcher wish to observe? Under what conditions of control?

First, since ID is by definition a process involving interaction among humans and they necessarily operate within social systems, one of the most important classes of phenomena to be observed is the behavior or participants in the ID process. Participants include both those directly involved in ID projects and those within the organizational setting who have some relationship to ID. Gerlach (1984) argues that prescriptive rules can be developed by looking at the behavior of the developer as a dependent variable (p. 27).

Having determined that a major class of phenomena to be studied is that of the behavior of participants in ID, how does one observe such behavior? There are at least three broad possibilities:

1. Direct observation of behavior in vivo

   - participant observation, nonparticipant observation, ethnography

2. Indirect observation

   - perceptions of participants (e.g., through questionnaires), post hoc recollections of participants (e.g., through interviews), examination of artifacts of ID activities (e.g., ID documentation, organization records)

3. Simulated observation

   - contrived ID situations observed by means of experimental or quasi-experimental designs (e.g., comparison studies).

Another major class of phenomena to be studied is that of the effects of ID products on their intended audiences. What changes in knowledge, skill, and attitude result from exposure to developed instruction? From measurement of changes in ability or attitude we can infer the efficacy of different ID interventions. Questions of this sort lend themselves to the traditional research paradigms carried over from educational psychology, experimental, and quasi-experimental designs.

The experimental paradigm applied to student achievement lends itself well to answering questions about the products of ID but less well to questions about the processes of ID. For example, a review of research on formative evaluation by Baker and Alkin (1973) reveals a rich vein of empirical research on this aspect of ID. They cite some two dozen studies in which various methods of formative evaluation have been tried out on real or simulated ID products. This element of the ID process--formative evaluation--perhaps because it lends itself to concrete testing with actual learners, has

been one of the most popular subjects for empirical study in the domain of ID. More recent studies (Kandaswamy et al., 1976; Nathenson, 1979; Burton & Aversa, 1979; Golas, 1983; Wager, 1983; Israelite, 1984) continue to demonstrate the possibility of making inferences about optimal ID procedures based on the learning effects of those procedures. However, as we move backward in the ID process, away from the final product, the causal links become more and more tenuous. That is, it would be difficult to judge the efficacy, for instance, of a given task analysis technique based on the criterion of learner achievement because so many other intervening processes come between that task analysis decision and the ultimate effect on the learner. For example, the task may have been analyzed beautifully, but the analysis may have been presented to the learner by means of a boring delivery vehicle. Further methodological work is needed to clarify the current murkiness and lack of consensus regarding methods for evaluating these process phenomena.

Methodological disputes in the domain of ID tend to revolve around tradeoffs between internal and external validity. That is, employment of rigorous experimental designs with sophisticated statistical treatments enhances the internal validity (control over variables) at the expense of external validity (applicability of findings to real-life settings). The whole thrust of the naturalistic inquiry movement which is well under way in this field is to gain meaningfulness, even at the sacrifice of generalizability. (The sacrifice, of course, is not absolute; Schwen [1977] discusses ways in which generalizability can be enhanced, even in case studies.)

The issue is not whether research in ID ought to adhere more to one paradigm than another. The issue is to select that paradigm and those methods that are most likely to cast light on the particular phenomena under scrutiny in a given study. It should be clear by now that even the rather restricted topic of instructional development encompasses phenomena ranging from learners' cognitive processing of specific stimuli to the political ramifications of different project management schemes. The former may be studied profitably by experimental, psychological methodology, the latter by holistic, naturalistic observation. As Winn (1986) expressed aptly,

> I am bothered by the feeling I get that proponents of each class of method are proposing alternatives to rather than complements to the other class of method. Given the eclectic nature of research questions in our discipline (and in Education generally), we must have at our disposal a whole battery of methods to deal with the different types of things we need to find out (p. 20).

Thankfully, further steps down the path toward an agenda for research on ID can be guided by such aids as the criteria for inquiry advocated by Schwen (1977) and the logistical recommendations of Hannafin 91986). Researchers need not travel alone on this journey.

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